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REPORT
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NUCLEAR PROTECTIONS AND SAFETY ACT OF 1987

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Mr. NUNN, from the Committee on Armed Services, submitted the following

REPORT

together with

ADDITIONAL VIEWS

[To accompany S. 1085]

The Committee on Armed Services, to which was referred Title I of S. 1085, the bill to create an independent oversight board to ensure the safety of United States Government nuclear facilities, to apply the provisions of OSHA to certain Department of Energy nuclear facilities, to clarify the jurisdiction and powers of Government agencies dealing with nuclear wastes, to ensure independent research on the effects of radiation on human beings, and for other purposes, having considered the same, reports favorably thereon with an amendment and recommends that the bill as amended do pass.

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I. Introduction

This report accompanies the Senate Armed Services Committee's amendment to Title I of S. 1085, the Nuclear Protections and Safety Act of 1987. S. 1085 was reported by the Senate Governmental Affairs Committee on September 24, 1987 and, by unanimous consent, was referred to the Armed Services Committee until November 24, 1987.

Title I of S. 1085 would create an Independent Nuclear Safety Board (hereinafter the "Board") to improve oversight and to promote the safety of the Department of Energy's nuclear facilities. The other three Titles of S. 1085, not considered by the Armed Services Committee, would (1) apply Occupational Safety and Health Administration (OSHA) and National Institute for Occupational Safety and Health (NIOSH) oversight to Department of Energy (DOE) nuclear facilities; (2) clarify the applicability of the Resource Conservation and Recovery Act (RCRA) to mixed radioactive and other hazardous waste from DoE facilities; and (3) create a Radiation Study Advisory Board to advise and assist the Secretary of Energy in conducting studies of the effects of radiation. Although the Armed Services Committee did not elect to request sequential referral of Titles II–IV, the Committee notes that these provisions substantively affect matters of interest to, and under the jurisdiction of, the Armed Services Committee.

The Armed Services Committee held five comprehensive hearings which established the basis for its actions on this important legislation. The Committee's efforts were facilitated by its intimate knowledge of DOE's defense nuclear complex, over which the Committee has exclusive jurisdiction. Furthermore, the Committee has followed with distinct interest the pioneering investigations of DOE environmental and safety issues spanning several years by the Governmental Affairs Committee, in particular its dedicated Chairman, Senator John Glenn. The Committee has also benefited from its extensive overlap in membership with the Governmental Affairs Committee: five Members of Armed Services also serve on the Governmental Affairs Committee—Senators Glenn, Nunn, Levin, Bingaman and Cohen.

Finally, the Committee's deliberations were aided by the recent release by the National Research Council (the investigative arm of the National Academy of Sciences) of its study [1] of the Department's production reactors. The study's insights, conclusions, and recommendations are highly relevant to the consideration of S. 1085, and figure prominently in the Committee's amendment.

The Committee emphasizes its concurrence with the Governmental Affairs Committee's recommendation to create a safety oversight board. In fact, the National Defense Authorization Act for Fiscal Years 1988 and 1989 contains a provision (sec. 3134) establishing interim oversight by the National Academy of Sciences pending the enactment of legislation to create a permanent review board.

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[1] "Safety Issues at the Defense Production Reactors," National Academy of Sciences, National Academy Press, Washington, DC, 1987

The Committee was compelled to seek sequential referral of Title I of S. 1085 in view of the significant potential of that legislation to affect the operations of the nuclear weapons production complex over which this Committee exercises exclusive jurisdiction. In the course of the Committee's review and hearings, several aspects of the bill were identified as requiring revision.

The following section of this report provides the background and context for understanding the problems facing the Department of Energy's defense nuclear complex and the issues that must be addressed by the Congress and the Executive Branch—now, in this legislation, as well as in future years—for the long-term safety of the complex and the assurance of the nation's security.

Next, the report provides a detailed analysis of Title I of S. 1085 as reported by the Governmental Affairs Committee and referred to this Committee. The main focus of this analysis is on the issue of the investigative priorities of the Board, the risk standards to be applied by the Board, and the mechanisms for consideration and disposition of the oversight Board's recommendations to the Secretary of Energy. Other areas of concern include the facilities under the Board's purview and the extension of the Board's responsibility to environmental matters.

Following the analysis of S. 1085 as reported by the Governmental Affairs Committee, this report provides the views of the Armed Services Committee regarding criteria and requirements for an effective oversight board. This analysis draws upon the conclusions and recommendations of the previously cited National Research Council/National Academy of Sciences report ("NAS report"), DOE's extensive experience with external technical advisory review, and the many GAO reports commissioned by the Governmental Affairs Committee and other Members of Congress.

The final section of the report contains a detailed section-by-section analysis of the Committee amendment.

II. Background

The Department of Energy and its predecessor agencies have been responsible for producing critical nuclear materials for national security purposes since the establishment of the Atomic Energy Commission in 1946.

REVIEW OF DOE SAFETY ISSUES

The Atomic Energy Commission (AEC) was the pioneer of and remained for many years the preeminent leader in nuclear technology, in terms of both production and safety. It presided over the great expansion of the nation's Government-owned weapons production complex during the 1950s and early 1960s. By and large, the facilities built almost three, decades ago—albeit with continuous upgrades—make up the complex the Department of Energy manages today. In 1974, the AEC was split into an independent agency for regulating commercial nuclear power (the Nuclear Regulatory Commission or NRC) and an Executive Branch organization, the Energy Research and Development Administration (ERDA). The latter formed the basis for the creation of the Department of Energy in 1977.

The AEC, like the DOE today, relied extensively on the expertise of the contractors hired to build and operate the nation's defense nuclear complex. The AEC, however, had a headquarters staff possessing an extremely high degree of technical competence, and this body aggressively pursued its oversight responsibilities. In addition, the AEC was aided by the Advisory Committee on Reactor Safeguards (ACRS), also established in 1946 as an advisory body to provide technical expertise for the AEC's research, test, and production facilities.

During the prime years of the AEC in the 1950s and 1960s, the commercial nuclear power industry was in its infancy. The leading nuclear expertise, experience and technology resided in the Government and the contractors who designed, built, and operated its facilities. Over time, and particularly after the reorganization of the mid-1970s, this situation changed significantly.

As the use of nuclear energy to generate electric power became widespread in the commercial sector in the late 1960s, and the Government consciously relinquished the role of developing technology to the private sector, the Government did not sustain its pace-setting level of technical expertise, particularly once the AEC was bifurcated. The ACRS also was largely lost as a technical resource to the nation's defense nuclear programs in that reorganization. Many of the individuals on the contractors' staffs who had originally designed and engineered the production facilities retired or moved on, diminishing somewhat the pool of expertise available to those most directly responsible for ensuring adequate safety. Meanwhile, the Government's defense facilities were growing older and more difficult to maintain. During the same period, the commercial sector expanded and became a leader in nuclear technology, experience, and safety—but with nuclear facilities that are distinctly different in design parameters and safety mechanisms from those in DOE's defense complex.

Shrinking defense budgets throughout the 1970s also strained the Department's resources. These budgetary pressures continue to this day. DOE's overall budgetary priorities also shifted significantly in response to the oil crisis and the wavering of public support for nuclear power. Détente and arms control contributed to uncertainty about the long-term capacity and modernization requirements for the complex. The resources invested in the complex were insufficient, although the demands for nuclear materials continued largerly unabated.

Ironically, these budget pressures were heightened in the 1980s as a result of the Reagan Administration's emphasis on strategic force modernization. Production requirements were significantly increased, but not enough money was requested both to expand production and to modernize the defense complex.

Thus, there are four major factors which, over the years, have led to concerns about the safety of operations at the nation's defense nuclear complex: (1) a relative migration of expertise from the Department of Energy and its contractors to the commercial sector; (2) a degree of isolation of the Department's nuclear complex from developments, information sources, and analytic techniques that have grown up in the commercial sector; (3) serious

aging of facilities within the complex; and (4) severe budgetary constraints.

According to the National Academy of Sciences (NAS) report and other studies, these factors have had a subtle but serious effect on the safety of operations at DOE's nuclear complex. Chiefly, these effects can be described in terms of risks: the problem of defining acceptable standards of risk; the challenge of translating those standards into concrete requirements for the operators of the facilities and for those who must ensure that the requirements are being met; the need to ensure that decisionmakers have the knowledge and analytic tools necessary to understand what risks are posed; and the requirement to establish standards by which to measure the costs and benefits of modernization alternatives.

The NAS does not take exception to DOE's basic, stated safety objective. The Atomic Energy Act establishes a safety standard for commercial reactors of "adequate protection of public health and safety." The Department of Energy some time ago adopted the goal of achieving "comparability" with commercial standards as a means to that end. For commercially licensed reactors, the Atomic Energy Act establishes a two-tier structure for protecting the public health and safety. See *Union of Concerned Scientists* v. *NRC*, 824 F.2d 108 (D.C. Cir. 1987). In that case, the Court of Appeals described the operation of this structure as it affects cost considerations:

> In setting or enforcing the standard of "adequate protection" that this section requires, the Commission may not consider the economic costs of safety measures. The Commission must determine, regardless of costs, the precautionary measures necessary to provide adequate protection to the public; the Commission then must impose those measures, again regardless of costs, on all holders of or applicants for operating licenses. "Adequate protection," however, it not absolute protection; thus, even when the adequate-protection standard is satisfied, safety improvements will be possible. Section 161 of the Act empowers (but does not require) the Commission to establish safety requirements that are not necessary for adequate protection and to order holders of or applicants for operating licenses to comply with these requirements. In deciding whether to establish and how to enforce such additional requirements, the NRC may take economic costs into account, even to the extent of conducting strict cost-benefit analyses. (824 F.2d at 114).

In pursuing the goal of "comparability," the Department of Energy's concept of avoiding "undue risk" [2] implicitly embraces the NRC's two-tiered standard of "adequate protection" at the minimum and the possibility of higher levels of protection if cost-benefit analyses so justify.

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[2] Section 182 of the Atomic Energy Act, 42 U.S.C. 2232 (1987). The "adquate protection" standard is the same as the "undue risk" standard. *Union of Concerned Scientists* v. *NRC*, 824 F.2d 108, 109 (D.C. Cir. 1987).

The NAS study endorsed DOE's safety concept. The NAS not only believes that cost-benefit analyses are permissible, it explicitly criticized the Department for deficiencies in its use and application of cost-benefit analysis techniques. In testimony before the Committee, the NAS and every other witness criticized the concept of "zero risk" as impractical and unjustified.

The NAS's main criticism of DOE on the issue of risk standards is that the Department's safety concept has not been adequately articulated or concretely reflected in DOE's requirements or Orders. The result is that there is no consistent and clear baseline to guide the operators of the facilities or to serve as a basis for DOE's evaluation of the operators' performance.

Moreover, "comparability" can be an elusive goal given the uniqueness of many of the Department's facilities and processes. The Department has been slow to explore and adopt the sophisticated quantitative analytic techniques and tools, such as probabilistic risk assessments (PRAs), that should underpin the translation of commercial standards to Orders relevant to DOE facilities. Alternatively, these quantitative techniques could serve as the basis for the establishment of DOE's own set of standards. These types of analyses also are valuable for determining the actual risks a particular facility may pose, which is the fundamental step in establishing safety requirements, making modernization decisions, and reassuring the public. The problem, of course, lies in adapting these sophisticated techniques from the commercial world to the quite different technologies and processes employed in DOE's production complex.

The NAS report also points out that even if DOE had a clear and consistent set of guidelines for its contractors and for internal oversight of contractors and facilities, the Department does not possess sufficient technical expertise to adequately evaluate issues independent of its individual contractors. Finally, there is an insufficient audit process and field presence by the Department for adequate oversight of contractors and facilities.

The NAS study admonishes readers not to underestimate the difficulty, expense, and time required to perform these risk analyses. In fact, depending on the speed with which DOE facility replacement is pursued, NAS questions the degree to which such assessments are worth doing. Nevertheless, as the NAS study notes, the Department already has full probabilistic risk assessments underway for its production reactors. DOE's recent decision to negotiate a Memorandum of Understanding (MOU) with the Institute for Nuclear Power Operations (INPO) should also provide much information useful to the Department as it attempts to resolve these safety and risk issues. The Committee strongly endorses this initiative.

The treatment of risk issues under S. 1085 as reported by the Governmental Affairs Committee is set forth later in this report, but a brief overview is provided here in the context of risk analysis. Mr. Delbert Bunch, Deputy Assistant Secretary of Energy, testified before the Committee on the similarities between the NRC's and Department's concepts of adequate protection, and the Department's concerns about the standard established by S. 1085 as reported by the Governmental Affairs Committee:

> The Nuclear Regulatory Commission, of which I was a member for some years, has a two-tier standard. They have a set of requirements, as does the Department, [which] are the minimum acceptable requirements. No matter what, you just simply cannot operate a plant unless you do these things. Cost is not an object, it is not a factor.
>
> Once you get past that point where you are talking about improvements, whether they are substantial or minor, the NRC has adopted a cost-benefit standard that says it is entirely appropriate, once you have shown that you are adequately safe, that there is not an undue risk, to take cost into account; you ought not make a change unless it makes sense economically. The Department's procedures generally are of the same type. We have a set of operating safety requirements or technical limits that control and govern the operation of each of our facilities. Those have to be met.
>
> The concern we have had, at least in terms of the construct of S. 1085, is it does not have this two-tiered approach. It requires change so long as people can identify a measurable improvement in safety, without regard to cost.

The Committee shares this concern. S. 1085 as reported by the Governmental Affairs Committee would grant to the safety Board latitude to make recommendations to establish standards of safety that are potentially more stringent than those applied by the NRC and approved by the courts. S. 1085 permits the proposed Board to make recommendations to "substantially reduce" the possibility of any adverse effects on the public from the operation of DOE's nuclear complex. While one class of recommendations are advisory only, the recommendations dealing with the prevetion of "events" are also binding on the Secretary of Energy, in the sense that rejection requires approval by the President.

DOE'S SAFETY RECORD

In identifying deficiencies in the way DOE has managed its safety responsibilities, the impression may be fostered that DOE's actual safety record is poor. It is important to correct any such impression. In fact, as the NAS study suggests, a contributing factor in the neglect of DOE's modernization problems, and the relative complacency of the Department itself, has been the Department's remarkably good safety and production record. Throughout the postwar period and up to the present, DOE and its predecessors have maintained an impressive health and safety record. As the NAS study points out, and as testimony before this Committee confirms:

> The contractors responsible for the operation [of DOE production reactors] have excellent records of safe operation. There have been no major reactor accidents at these facilities. [They] have records of avoidance of lost workdays

as a result of on-the-job injuries at least 10 times better than that of U.S. industry as a whole.[3]

In terms of reactor operations, DOE consistently out-performs the commercial nuclear sector as a whole. So-called Unusual Occurrence Reports for the defense production reactors, for example, are significantly fewer in number than the commercial reactors' License Event Reports for equivalent reportable events. DOE's automatic reactor "scrams" (an unplanned automatic shutdown of the chain reaction) are comparable in number to the number of commercial scrams, although the DOE reactors have 12-to-20 times more monitors capable of initiating a "scram" than do commercial reactors. At the N-reactor on the Hanford Reservation in Washington State, the forced outage rate [4] has been equal to the overall commercial rate, despite the age of that facility. At the reactors at the Savannah River Plant in South Carolina, the forced outage rate is only half the commercial rate.

When the record is examined for worker health and safety, a similar picture emerges. Overall, DOE's lost-time accident rates are less than one-third the national average. Lost workday rates have averaged less than half the National Safety Council Industry average rates. Radiation exposure levels are continually improving, and are now at one-tenth the level they were in 1974. In the last decade, less than one percent of all DOE workers exposed to any radiation have received more than 2 REM, which is one-third the rate prevailing at commercial facilities. Moreover, not a single worker has received more than 5 REM, which is the EPA's and NRC's recommended exposure guideline.

However one chooses to examine the record—reactor incidents, day-to-day operation, worker radiation exposure, or worker injury rates—DOE's safety record has been excellent, a fact confirmed by several witnesses before the Committee, including the NAS and the Occupational Safety and Health Administration of the Department of Labor. The facts about DOE's safety and health record are likely to surprise casual observers. Nuclear weapons activities are not currently held in high esteem and, for many, the continued production and maintenance of our nuclear deterrent is accepted, at best, as a necessary evil. In addition, the near-disaster at Three Mile Island, the Chernobyl disaster, and countless examples of lesser accidents and incidents at commercial nuclear power facilities have greatly reduced the public confidence in the safety of nuclear facilities, whether privately owned or government-owned. Added to this, in the case of DOE, is the perception that "the same people that operate the facilities are responsible for regulating the facilities"—a criticism repeated in the National Academy Study. There is some concern that the excellent safety record has induced a more complacent attitude toward safety problems at the time that the continued aging of the facilities may be making them more prone to problems.

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[3] NAS Report, p. 61.

[4] A measure of the time plants are off line as a result of equipment failure or other conditions.

SAFETY VERSUS ENVIRONMENTAL ISSUES

Compounding this problem is the frequent confusion between production safety issues at the DOE complex and the environmental waste problem that has been building up since the Manhattan Project. There is no question that the defense nuclear complex's managers made serious mistakes, beginning years ago, in ignoring the long-term implications of disposal practices for radioactive and toxic waste. The magnitude of the problem, although not yet fully documented, is enormous. The cost of corrective actions will also be enormous. Recently, Congress has taken steps to begin to rectify decades of neglect in both the public and commercial sectors. Foremost among these accomplishments are (1) the regulatory statutes for cleaning up these wastes, which provide full enforcement authority to the EPA and the states; and (2) the process for selecting and preparing permanent repositories for these wastes. Complete implementation, however, will take many years.

The problem facing the Department and the Congress is that these legitimate criticisms of DOE's past waste management practices are frequently used to impugn the Department's production safety record and attitudes. Despite the tendency to lump safety and environmental issues together, the two are distinct in existing law and should be kept so in any proposed legislation. Cleaning up old waste sites has nothing to do with ensuring the continued safe production of nuclear materials. The Governmental Affairs Committee, the GAO, and the NAS have all asserted that a safety board is needed to ensure that meeting production requirements does not overshadow the need for safe production. The Armed Services Committee agrees completely with that rationale. DOE's environmental legacy is a separate issue that is being dealt with under existing law.

The environmental restoration problem is relevant to the matter before us, however, in this one respect: it is an issue like facilities modernization, that was ignored for too long. Deferring payment year after year on these bills is, in effect, another form of deficit spending. In the process, the true cost of the nation's defense has not been accounted for.

The Congress has already passed comprehensive regulatory legislation aimed precisely at the cleanup problem. The Resource Conservation and Recovery Act (RCRA) statutes empower the Environmental Protection Agency (EPA) and the states to regulate DOE's current waste management practices through a permit process, and the issuance of permits can be made contingent on the cleanup of inactive sites. Thus, between the Superfund and RCRA legislation, ample legal enforcement power is available to established, interested, and responsible parties. It is with some concern, therefore, that the Committee notes that Title I of S. 1085 could be construed as opening the door to the proposed safety board to inject itself in the waste regulator process.

EMERGING SOLUTIONS

The accident at Three Mile Island in 1979 has a significant impact on safety programs within the commercial nuclear power sector. A wealth of new ideas, analytic tools, and assessment tech-

niques has been developed. Overall, the commercial sector has much expertise and experience available that the Department of Energy could profitably exploit.

The Chernobyl incident increased the concern about the safety of nuclear facilities, and prompted the Secretary of Energy to commission a series of in-depth reviews by outside experts of the safety and integrity of the Department's major production facilities. The Secretary has taken prompt and far-reaching actions in response to the recommendations of these advisory groups.

In response to several studies, the N-reactor at Hanford has been shut down for significant safety ungrades, and the remaining production reactors at Savannah River are operating at 50 percent power pending resolution of analytic uncertainties related to the capacity of their emergency core cooling systems.

In response to the NAS recommendations, the Secretary announced the immediate and unilateral establishment of an external safety oversight review committee; the intention to establish formal and close working relationships with the Institute for Nuclear Power Operations (INPO) to exploit information sources in the commercial sector; and a further strengthening of DOE's internal Environment, Safety, and Health (ES&H) organization. These actions follow and supplement a series of initiatives Secretary Herrington has implemented since assuming office in 1985.

The NAS has concluded that "DOE can accomplish the reactor safety functions assigned to it by Congress if it dedicates itself to the task." The Committee believes such dedication by the Department has been evident for several years already. The Committee believes that legislation should formalize the establishment of an independent safety board to assist the Secretary in carrying out his mandate to assure that DOE's production complex is operated without undue risk to public health and safety.

The Committee concludes that such a board could prove to be a valuable asset to the Department, provided that it is properly structured. The Board should assist the Department in establishing clear and rational safety standards and Orders. These standards, and the insights, analyses, and expertise gained in defining them, will provide the objective basis for measuring contractor performance, assessing the real safety status of facilities and determining what must be done to permit continued safe operation of the complex, while proceeding to plan and build new facilities on an expedited basis to replace major elements of the existing, and increasingly obsolescent complex.

The Board is expected to raise the technical expertise of the Department substantially, to assist and monitor the continued development of DOE's internal ES&H organization, and to provide independent advice to the Secretary. Above all, the Board should be instrumental in restoring public confidence in DOE's management capabilities—a clear prerequisite for the continued production of the nuclear materials vital to the nation's security.

Establishing this institutional mechanism to assist DOE on safety matters, however, is only part of the answer. The enabling element must be supplied by the Congress and the Executive Branch, through a commitment to provide the funds to modernize the complex. Given the budgetary outlook, this may be the most

difficult accomplishment of all. The Armed Services Committees of the House and Senate this year took the most important first step in authorizing the start of a New Production Reactor and setting a requirement for a Presidential report on a comprehensive facility moderinzation plan for DOE's defense complex. These beginnings must be sustained. The long-term safety of the complex and its productive capacity are not at odds; they are rather the two sides of the same modernization coin.

III. Analysis of S. 1085 As Reported by the Governmental Affairs Committee

INTRODUCTION

The Committee has three interrelated concerns about Title I of S. 1085 as reported by the Governmental Affairs Committee. These are (1) the lack of clear priorities in the mission assigned to the Board; (2) the possibility that an overly-stringent safety standard could be applied; and (3) the substantial powers of the Board. Taken together, these endow the Board with significant authority but insufficient responsibility for the consequences of its actions. This section examines each of these major concerns in turn. The Committee's view on the facilities includes within the Board's purview are discussed in a subsequent section of this report.

It is appropriate at this point to provide some caveats to the analysis which follows. First, some recommendations the Board may make under S. 1085 are purely advisory. These relate to changes in the content and application of the Orders governing DOE nuclear facilities. The Committee takes no exception to these provisions of S. 1085, and in fact builds upon them in its amendment. These provisions are not addressed in the following analysis.

Second, the Committee's analysis is based on its reading of the actual bill and accompanying report. The analysis makes no attempt to account for the intentions and interpretations of the framers of the bill. For example, it appears that the Governmental Affairs Committee intended that only significant actual or potential accidents and incidents should be the subject of recommendations requiring Presidential review. However, the Armed Services Committee believes that the bill does not fully reflect this objective.

INVESTIGATIVE PRIORITIES

The Committee believes that any safety oversight board, like *the Roddis Panel* [5] and the NAS review after which it is supposed to be modeled, should make the prevention of major nuclear accidents at DOE facilities, its first priority.

In contrast, S. 1085 as reported by the Governmental Affairs Committee, directs the Board to recommend ways to reduce the likelihood that an event will occur that has "an actual or potential adverse effect on the public health and safety." The operative phrase employed throughout is an "actual or potential adverse effect." There is no further qualification of the nature of the event,

[5] The so-called Roddis Panel is named for Louis Roddis, who headed a group of distinguished experts in a review of the N Reactor at Hanford, WA, at the request of the Secretary of Energy.

the severity of the potential impact on public health and safety, or other consequences of potential accidents or incidents.

Thus, there are no explicit or implicit investigative priorities statutorily established for the Board. The risk of an incident with minor adverse effects, such as an accidental release of small amounts of toxic or radioactive substances, potentially has the same standing as the risk of catastrophic adverse effects, such as an accident on the scale of the Chernobyl reactor disaster. The same observation applies to recommendations the Board may make. Recommendations to reduce the potential for minor or very remote events have the same stature at those aimed as severe accidents.

STANDARDS OF RISKS AND CONSEQUENCES

Related to the lack of explicit priorities in S. 1085 as reported by the Governmental Affairs Committee is the bill's failure to differentiate adequately in statutory language between major and minor risks and consequences.

Section 103 of Title I of S. 1085 as proposed by the Governmental Affairs Committee would amend Title II of the Energy Reorganization Act of 1974 by adding a new Section 212. In Section 212, subsection (g)(2)(A)(i) directs the Board to "investigate any event" that it determines to be important "because of an actual or potential adverse effect on the health and safety of the public." Subsection (g)(2)(D) defines an "event" as any "action or failure to act" that the Board determines to have "an actual or potentially adverse effect on public health and safety." Subsection (g)(6)(A) directs the Board to recommend measures to "substantially reduce the likelihood that events will occur at any Department of Energy nuclear facility."

The Report accompanying S. 1085 states that the Board will recommend measures "to minimize the likelihood of events occurring." (p. 27) The use of the term "to minimize" along with the examples of the Board's operation contained in the report could be interpreted as establishing legislative intent that "substantially reduce" to synonymous with "minimize."

The definition of "event" does not distinguished between serious and minor "adverse effects." In terms of the impact on the public, the Board is free to recommend measures to "substantially reduce" any level of "adverse effect." The definition of "event" does not distinguish between the probable and the extremely remote. So long as an event has a chance of occurring, the Board is directed to examine it ("The Board shall investigate . . .").

In sum, the Board is free to consider any event that poses any level of adverse effect, and such consideration can lead directly to a recommendation for "substantial reduction" of the chance of it occurring; and such recommendation, as will be discussed subsequently, is binding on the Secretary, in the sense that the President must affirm the Secretary's decision to reject any recommendation, or agree to request funding to implement a recommendation with which the Secretary agrees but is unable to implement due to lack of funds.

At the same time, the Board's recommendations are not constrained by cost considerations. On page 28 of the Report, the Board is admonished that its recommendations "should not be restricted by cost." Therefore, cost is no object in seeking to prevent events, whether likely or remote.

Subsection (g)(6)(A) directs the Board to consider "technical and economic feasibility." Page 28 of the Report states, however, that "this is not a cost-benefit analysis formula." The Report explains that technical feasibility requires only that a recommendation "be capable of implementation." The Report further explains that economic feasibility means merely that the Board should "compare the costs of alternative approaches" and recommends the most economic approach.

The Report adds, on page 30, that "the bunden of demonstrating that a recommendation is not technically or economically feasible rests with the Secretary."

Considering these provisions and definitions together, the Board is permitted to recommend any measure that the Secretary is unable to prove is not infeasible, regardless of cost, so long as it reduces the chance of even remote events, which could have only negligible adverse consequences for the public health and safety, from occurring. This is not to argue that the Board would in fact focus on the trivial, but it clearly is free to do so if it chooses, and it is not encouraged otherwise in either bill or report language. Even if the Board does not choose to interpret its mission in these terms, or fails to act on it, third parties may well seek to enforce their interpretation of the Board's mandate and duty through litigation. Clearly, the Board's recommendations are not to be tempered by cost-benefit analyses or any balancing of consequences avoided per dollar invested.

Board "recommendations" pursuant to subsection (g)(6)(A) can be rejected only by direct Presidential intervention. It has been asserted that the number of recommendations made by the Board requiring Presidential review would be small—that they would apply only if a serious potential accident was found to be imminent—and therefore Presidential involvement would be rare. As the above analysis makes clear, no such priorities for Board attention are contained in either bill or report language. The Board is not constrained in the number of recommendations to "reduce the likelihood of events" it can formulate, all of which require Presidential review if the Secretary does not wish to implement the Board's recommendations. The Report merely notes "It is hoped the Secretary will be able to immediately implement all the Board's recommendations," in which case, of course, Presidential review is moot.

In the background section of this report, the Armed Services Committee has described both the NRC's and the DOE's basic safety standards and concepts. As the analysis in this section demonstrates, S. 1085 as reported by the Governmental Affairs Committee does not provide adequate limits on the pursuit of safety. As a result, S. 1085 would permit the Board to pursue standards of safety and acceptable risks that are more stringent than those applied by the NRC to commercial reactors. Without further amendment, S. 1085 would permit the Board to pursue safety standards that can be construed as approaching unconstrained criteria be-

cause there are no limits on or consideration of the costs of taking corrective action, there is no requirement to consider the probability or remoteness of a threat to safety, and there is no requirement to consider the severity of the consequences of an actual or potential event.

Such standards can and should be modified and clarified. Acceptance of some amount of risk is necessary for any human endeavor, whether it be flying in an airplane, driving a car, or crossing the street. Indeed, this Committee deals each year with the task of balancing risks to the nation in the fashioning the annual defense budget.

THE POWERS OF THE BOARD

If the safety board established by S. 1085, as reported by the Governmental Affairs Committee, were merely advisory to the Secretary, an expansive mission to investigate and promote safety without regard for costs and consequences could perhaps be justified. Alternatively, a board with regulatory powers could be entertained if suitable constraints were established to ensure the adequacy of its criteria, or the scope of its mission, and of its priorities in formulating mandatory recommendations. S. 1085, however, would create an unacceptable hybrid—the Board would have strong risk-reduction mission and its "recommendations" could not be rejected solely by the Secretary.

A more fundamental issue, however, is whether the board should be able to require Presidential review whenever the Secretary disagrees with its recommendations. The Committee does not believe that a board with such powers is required or appropriate. Many witnesses specifically recommended an advisory board, including the National Academy of Sciences. The Armed Services Committee's rationale for beginning with an advisory board is detailed in a subsequent section of the report. The balance of this section describes the substantial powers the Board established by S. 1085 as reported would have over the Secretary.

THE EXEMPTION PROCESS

As proposed by the Governmental Affairs Committee, the Board's recommendations under Section 212(g)(6) must by law be implemented within one year unless the President of the United States grants an exemption based on one of three categories—described below. The Committee believes this exemption process is too narrowly defined, of questionable practicality, and inappropriately requires direct Presidential involvement. If no Presidential exemption is forthcoming, the Secretary's only recourse is to close the facility in lieu of implementing the Board's "recommendation." In effect, the Board is given directive powers over a cabinet officer.

TECHNICAL AND ECONOMIC FEASIBILITY

Under the first exemption of S. 1085 as proposed by the Governmental Affairs Committee, the Secretary may disagree with a Board recommendation if he finds a basis for certifying that the recommendation is "technically or economically infeasible." Subsequently, the Secretary must convince the President of the accuracy

of his arguments. If the President concurs, he must inform the Congress of his specific facts and findings in upholding the Secretary's position.

"Technical feasibility" requires only that a recommendation be capable of implementation on the basis of accepted scientific and engineering principles. "Economic feasibility" requires only that the Board select the most economic of possible alternative methods to implement a recommended safety improvement. The technical and economic feasibility criteria, in short, do not permit the Secretary to argue that a recommendation is unaffordable or unattractive on cost-benefit grounds, because the Report of the Governmental Affair's Committee (p. 28) explicitly affirms that "this is not a cost-benefit analysis formula."

The only concession to such practical considerations in the Report of the Governmental Affairs Committee is the following statement (p. 30):

> In those instances where the Secretary believes the Board's recommendation addresses a non-existent or extremely remote technical possibility, and implementing the changes will be extremely burdensome, the Secretary may disagree with the Board. . . .

The Armed Services Committee believes that the ability of the Secretary to utilize this limited framework is questionable given the bill's definitions of technical and economic feasibility. That is, the definition of "economic feasibility" does not allow consideration of cost burdens, nor does the definition of "technical feasibility" permit any calculus of the probability of an event occurring. Nevertheless, this passage from the Report seems to offer the only chance the Secretary has to take issue with recommendations that he believes address only minor or unlikely events or those with only modest consequences, or which otherwise fail the test of cost-effectiveness based on a reasonable standard of safety. A Secretary's willingness to challenge the Board on recommendations he believes do not make sense may be severely restricted because of the fact that his dissent has to be confirmed by the President. Because the Board is not required to consider costs, cost-effectiveness, or the probability and severity of adverse consequences, it is imperative that the Secretary be allowed to do so. The possibility exists that he will wish to object to Board recommendations frequently on these grounds, but will find his ability to do so severely constrained.

The "technical or economic feasibility" test does not require any differentiation between serious safety issues on the one hand, and minor or remote ones on the other. It also does not provide a means to ensure that only important issues are elevated to the President. The Secretary may have to accept Board recommendations that he believes are unjustified, simply to avoid burdening the Chief Executive.

UNAVAILABILITY OF FUNDS

The second exemption is based on funding availability. If the Secretary determines that he is unable to implement a recommendation because he has insufficient funds available, the facility must

be closed within one year unless the Secretary can convince the President to request an appropriation of the Congress.

The Report to S. 1085, on page 30, acknowledges that his requirement "may pose significant difficulties in light of our current budgetary process." The Report suggests that it may be advisable to create a "contingency fund" so that this problem would not arise. There is no legislative provision in S. 1085 to establish this fund, nor is there a suggestion as to its recommended size and management.

Also, matters that may have to be adjudicated by the President under this exemption could be minor or remote in nature. This is so because the Board is enjoined from employing cost-benefit analyses that might filter out recommendations that are expensive but confer little benefit in terms of reduced risk to the public, and because the Sercretary has few discretionary funds available. If the President and the Office of Management and Budget reject the request, the facility would have to be closed, even if the rejection was based on solid analysis of the costs and benefits of a recommendation that goes beyond the requirements of an adequate protection standard.

The process S. 1085 creates for budgeting and implementing recommendations does not account for the considerable complexity that may attend many Board recommendations for safety improvements. Under S. 1085, the Board makes a recommendation which the Secretary of the President either accepts or rejects. If funds are not available to the Department, the facility must be closed unless funds are requested of the Congress.

There is a "black and white" cast to these procedures which the Committee finds troublesome and impractical. The Secretary and the President do not have the latitude to accept parts of a recommendation that may address very complex and technical matters. The Department does not have the latitude to adopt different, but perhaps less expensive and disruptive methods, to achieve virtually the same results.

Many recommendations may pose complex requirements for planning, analyzing, designing, contracting, and implementing on the part of the Department. It may not be obvious to the Board at the time it issues a recommendation how much money or time might be needed for implementation. There is a real need for latitude on the part of the Secretary, and for significant discussion between the Secretary, on the one hand, and the Board, Congress, and the contractors who would perform the work on the other, at all stages of the implementation process.

S. 1085 and the Report of the Governmental Affairs Committee do not provide the proper level of flexibility to the major parties, nor do they provide sufficient specificity with respect to their responsibilities. For example, who decides how much money is required to implement a recommendation? Must the Secretary request all the funds needed, or only enough to begin the project? Can the Secretary determine his own scheudle? Such unresolved issues would be less improtant if the Secretary could, in most cases, be the final decisionmaker on the Board's recommendations.

THREATS TO PARAMOUNT NATIONAL SECURITY INTERESTS

The third type of exemption is based on a Presidental finding of a threat to "the paramount national security interest." The report (p. 29) emphasizes that "this provision is restricted solely to those instances where the security of the nation will be severely threatened by closing the facility." The Report (p. 30) notes that the President "may choose to amend stockplies production targets rather than keep a facility open."

The Nuclear Weapons Stockpile Memorandum is produced annually and approved by the President (Section 91 of the Atomic Energy Act 42 U.S.C. 2121). It is not a premissive document but rather a carefully coordinated requirement for the production of nuclear materials to support the nation's nuclear deterrent. Formal participants in the process include the U.S. unified and specified Commanders-in-Chief, the Joint Chiefs of Staff, the Office of the Secretary of Defense, each of the Military Departments, the Nuclear Weapons Council, the Department of Energy, and the National Security Council. The production requirements for the current year must be met by the Department of Energy, while the outyears' data are used to project workloads and to determine the need for additional capacity.

The standard of "severely threatened" security interests established by S. 1085 precludes basing exemptions on less severe threats to national secuirty interests. The Report takes the position that because the President may consider amending the production targets, a change in the Nuclear Weapons Stockpile Memorandum does not constitute, in and of itself, a "severe threat." Whether a change in the ability to meet the requirements of the Nuclear Weapons Stockpile Menorandum constitutes a threat to national security is a determination to be make by the President. By the mechanics of this exemption, as with the previous two exemptions, Presidential involvement could be required even as to recommendations that address minor safety concerns. In fact, any recommendation which prevented achievement of production goals may have to be referred to the President, even though the President can grant an exemption from the Board's recommendations only paramount or sever threats to our security.

The Committee agrees that it is not the Secretary of Energy's role to determine acceptable risks to national security. Whenever the Department of Energy cannot meet production requirements, the Atomic Energy Act already allows the Secretary of Defense to consider the impact, and to refer the issue to the President for a final decision:

> If the Department of Defense at any time concludes that any request, action, proposed action, or failure to act on the part of the Commission [now the Department of Energy] is adverse to the responsibilities of the Department of Defense, the Secretary of Defense shall refer the matter to the President whose decision shall be final (42 U.S.C. 2037).

It is appropriate for the President to make a final decision where important safety concerns, which are the responsibility of the Sec-

retary of Energy, clash with national security requirements, which are established by the President and his national security advisors. It is not appropriate to permit minor safety issues to be elevated to the President.

SUMMARY

In summing up this analysis of S. 1085's exemption process, one arrives at a number of conclusions. On the one hand, the exemption options available to the Secretary are drawn too narrowly. If the Secretary cannot make a good case on national security, scientific, or funding grounds, the Secretary must implement the recommendations. The Secretary cannot argue that costs do not justify the improvement. The Secretary cannot claim that the chance of an event occurring is low. The Secretary cannot claim that the consequences to public health and safety would be modest. The Secretary cannot claim that other needs are more pressing. The Secretary cannot argue that it would be better to husband limited resources to replace existing facilities rather than continue to make marginal improvements to obsolete plants. The Secretary cannot accept parts of a recommendation while challenging others, and he cannot choose alternative approaches that might provide nearly equivalent levels of safety at reduced costs.

Given that the Secretary's choices are limited, he may have to implement many recommendations he disagrees with because he has no statutory grounds for challenging them.

On the other hand, as has been shown, S. 1085's three avenues of exemption do not serve as a filter on recommendations; minor issues can end up being referred to the President as well as major ones, simply because the Board's recommendations themselves are not sufficiently constrained by practical considerations, in either the bill or the report.

The Committee believes that S. 1085 does not provide either well-defined safety standards or reasonable standards or risk. These deficiencies in the Board's charter are compounded by making its recommendations binding on the Secretary (in the sense that the President must concur in rejections), while at the same time directing the Board not to consider tradeoffs of costs versus benefits. By giving the Board such broad powers, S. 1085 shifts the burden of acting responsibly onto the President. Yet the President's options are at the same time constrained to three narrowly defined exemptions. We may have faith that a Board chosen by the President and confirmed by the Senate would behave responsibly, but if that is our desire, it would be far better to tighten the legislation for this purpose. There is also the risk that litigation by outside parties might seek to compel the Board to exercise its full legal charter and powers.

FACILITIES

Title I of S. 1085, as reported by the Governmental Affairs Committee, would give the oversight Board a mandate over all DOE nuclear facilities as well as the transportation of nuclear materials. The types of facilities covered include the civilian R&D reactors, the defense production reactors, the National Laboratories, the ma-

terials processing facilities, component manufacturing plants, radioactive waste management facilities, the weapons assembly facilities, and the nuclear weapons test site. The Committee takes exception to the inclusion of a number of these facilities within the charter of a safety board.

First, transportation of nuclear materials is already covered by the Hazardous Materials Transportation Act and is conducted under Department of Transportation regulation in approved containers.

Second, underground nuclear weapons tests are indivdiually evaluated by separate safety analyses, and the issues are entirely distinct from those connected with safety in DOE's production facilities. Nuclear tests are the subject of independent study and separate authorization, and do not involve continuing operations.

Third, while the avowed focus of Title I of S. 1085 is the safety of the nuclear weapons complex, on careful reading it is clear that the bill provides a mandate for the proposed Board to address environmental matters. The facilities under the Board's purview explicitly include waste sites, and the definition of the central term "event," which delimits the Board's inquiries and jurisdiction, clearly would cover releases to the environment from waste storage sites.[6]

The Committee believes that it is both unnecessary and inappropriate to extend a safety board's mandate to include environmental restoration matters. This belief stems not from a view that the Department's environmental problems are unimportant or insignificant in scope; nor does the Committee deny that the distinction bewteen safety issues and environmental issues can in some instances be blurred. The Committee emphasises, however, that a distinction exists, and that other legislative remedies and oversight of environmental problems are already in existence. Environmental matters in DOE—the management of waste operations and the cleanup of existing waste sites—are already heavily regulated by EPA and the states under the Superfund and RCRA legislation.

Given the existence of a comprehensive regulatory regime, it is not necessary to assign an environmental oversight role to a safety board. For one thing, the technical issues are quite different, requiring different—and additional—expertise within the Board. Second, it would needlessly dilute the focus and mission of the Board. Third, insofar as the Board's basic mission is to ensure that, in satisfying production requirements, the commitment to safety is not compromised, it is hard to discern a rationale for including environmental restoration in the Board's charter or for citing environmental problems in the justification for creating the Board in the first place.

The distinction between safety and environmental issues, in the Committee's view, should be that safety includes unintended releases from on-going production operations, which is a concept that would exclude normal waste management operations and remedial

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[6] The Committee's interpretation on this matter is seconded by the Congressional Budget Office's analysis of S. 1085, which is contained in the Report of the Governmental Affairs Committee accompanying S. 1085 (pp. 34-36). DoE, in testimony before the Committee, expressed the same conclusions.

actions associated with existing waste storage sites. The Committee stresses that a safety board should not be prohibited outright from crossing that potentially elusive line; the Committee seeks only to clarify its intention that safety of production operations must be the Board's primary concern.

In summary, the Committe believes it is appropriate for the Board to have jurisdiction over the defense production reactors, the material processing facilities, the component manufacturing facilities, weapons assembly facilities, certain nuclear waste storage facilities, and the National Laboratories.

IV. Requirements and Purposes for a Safety Oversight Board

This section provides the Committee's views on the broad requirements and purposes that a safety oversight board should address. The particular form and characteristics given to the Board in the Committee's amendment to S. 1085 stem from these broad considerations and criteria. As such, this section provides the context for understanding the details of the Committee's amendment to Title I of S. 1085.

SAFETY STANDARDS

The Committee believes it is of fundamental importance to establish a reasonable and acceptable basic standard of safety—both to guide the Board's investigations and recommendations, and to provide a benchmark for the Department as a whole to measure its safety risks, and its progress and problems in ameliorating them. The Committee recongizes that it cannot do more in legislation than establish the outline and concept of such a standard.

The Committee believes it is inappropriate and unnecessary for Congress to attempt to define safety standards in any detail. The proper role of Congress is to establish a policy and a concept of safety. The Committee's view is an endorsement of the concept of "adequate protection of public health and safety" and "avoidance of undue risk," as set forth in the Atomic Energy Act and in Nuclear Regulatory Commission regulations.

It is important that the Board be supplied with a sense of priority, and be focused on significant risks and consequences to public health and safety. Grappling with the problem of translating the broad adequate protection safety standard into clear, consistent, and concrete requirements is among the first priorities of the Department and the oversight board. Congress should not preempt or interfere with this process. The Committee intentionally declines to go beyond establishing an adequate protection standard as a matter of policy and legislative intent, and renders no judgment as to the appropriateness of requiring "comparability" with particular commercial standards imposed by NRC. The Committee does, however, endorse DOE's safety goal of comparability with safety standards applied to commercial facilities. The Committee categorically rejects any concept of "zero risk" or minimizing all risk of harm.

PURPOSE IN CREATING AN OVERSIGHT BOARD

The basic goals in establishing an independent safety oversight board are to assure and enhance the safety of operations of DOE's

nuclear facilities and to restore public confidence that these facilities are operated without undue risk to public health and safety.

The Committee does not believe that a safety board is a panacea for all DOE safety problems, or that it can in any way absolve the Secretary or the Department's contractors of their fundamental safety responsibilities. In fact, many witnesses testified that DOE's shortcomings largely reside within the Department's line management, and that there can be no substitute for capable and committed line management.

What the Board can do is provide critical expertise, technical vigor, and a sense of vigilance within the Department at all levels. The Board should be instrumental in helping DOE to develop appropriate and operationally meaningfully safety standards, and in ensuring their translation into clear and consistent requirements for DOE management and contractors. The Board should assist in further developing and broadening facility risk assessments and in measuring those risks against safety standards. With reasonable safety criteria as an objective basis for evaluation, the Board should also help the Secretary to make sound modernization decisions. Above all, the Board must have a primary mission to identify the nature and consequences of any significant potential threats to public health and safety, to elevate such issues to the highest levels of authority, and to inform the public.

BOARD POWERS

The Committee is not persuaded that it is either necessary or wise at this juncture to establish an oversight board with other than advisory powers. The clear consensus among the expert witnesses consulted by the Committee is that an advisory board to the Secretary of Energy is the appropriate mechanism at this time. If an advisory board proves to be an insufficient answer, the Committee is prepared to take additional actions.

The Committee seeks to establish a board that is an asset to the Department, and that can establish appropriate working relationships with those it oversees. The Committee believes this is possible, while ensuring that proper formalities and procedures, and independence of view, are preserved.

The advisory board structured by the Committee satisfies all the criteria established by the GAO and the National Academy of Sciences.[7] The Committee believes the workings of groups like the Roddis Panel at the N Reactor and the National Academy of Sciences at Savanannah River have clearly established the effectiveness of an advisory panel which conducts its business with broad public visibility. For this reason, the Committee believes an advisory oversight body whose recommendations have broad public visibility can provide both useful and credible safety oversight.

To paraphrase the testimony of J. Dexter Peach, Assistant Comptroller General, U.S. General Accounting Office, a board "needs authority to require action on its recommendations or findings. That authority does not necessarily mean that it is mandatory . . . . It is

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[7] See the NAS report, p. 66; and "Key Elements of Effective Independent Oversight of DOE's Nuclear Facilities," statement of J. Dexter Peach before the Armed Services Subcommittee on Strategic Forces and Nuclear Deterrence, October 22, 1987.

more [a question of] accountability . . . of DOE being required to respond . . . to the recommendations . . . . [We] think that is an effective measure of oversight, because if you have areas where recommendations are not well-founded in DOE's view, then their rationale should be able to stand that type of scrutiny."

What is needed now is to institutionalize these mechanisms by creating an ongoing oversight board rather than coninuing to use these an-hoc groups, and to formalize the process by which the Secretary must respond within a specified period on the public record to each of the board's formal recommendations.

Under these circumstances, the weight of public opinion and Congressional scrutiny will compel the Secretary to carefully consider the merits of each recommendation and to respond in convincing detail in cases where he elects not to implement a recommendation.

V. Hearings

The Senate Armed Services Committee held five hearings on the need for independent oversight of safety and health at Department of Energy nuclear facilities, and on the appropriate form and character of an oversight board. The individuals and groups appearing before the committee during each hearing are listed below.

October 22, 1987.—Overview of Title I of S. 1085: Senator John Glenn, State of Ohio; J. Dexter Peach, Assistant Comptroller General, Resources, Community and Economic Development Division, General Accounting Office; and Keith O. Fultz, Associate Director for Resources, Community and Economic Development Division, General Accounting Office.

October 26, 1987.—The Nuclear Weapons Requirements Process: General Robert Herres, Vice Chairman, Joint Chiefs of Staff, and Member Nuclear Weapons Council.

October 27, 1987.—Title I of The Nuclear Protections and Safety Act of 1987: Joseph Salgado, Under Secretary, Department of Energy; Troy Wade, Acting Assistant Secretary of Energy for Defense Programs; and Delbert Bunch, Deputy Assistant Secretary of Energy for Environment, Safety and Health.

October 30, 1987.—Safety Issues at Department of Energy Nuclear Facilities: Richard Meserve, Chairman, Committee to Assess Safety and Technical Issues at DOE Reactors, National Research Council, National Academy of Sciences; Neil Todreas, Massachusetts Institute of Technology, Member, Committee to Assess Safety and Technical Issues at DOE Reactors, National Research Council, National Academy of Sciences; Dana Powers, Sandia National Laboratory, Member, Committee to Assess Safety and Technical Issues at DOE Reactors, National Research Council, National Academy of Sciences; Steven Blush, Commission on Physical Sciences, Mathematics and Resources Study Director, Committee to Assess Safety and Technical Issues at DOE Reactors, National Research Council, National Academy of Sciences; and Gerald Tape, Consultant, Washington, DC.

November 3, 1987.—Title I of the Nuclear Protections and Safety Act of 1987: Frank White, Deputy Assistant Secretary for Occupa-

tional Safety and Health, Department of Labor; Victor Gilinsky, Consultant, Washington, DC; Donald M. Kerr, EG&G, Inc.

VI. Committee Action

The Committee met on November 19, 1987 to consider Title I of S. 1085. With a quorum present, by voice vote, and without objection, the Committee ordered the Committee amendment to Title I of S. 1085 favorably reported to the Senate.

VII. Section-by-Section Analysis of the Armed Services Committee Amendment

TITLE I

Section 101 states that this title may be cited as the "Defense Nuclear Safety Board Oversight Act of 1987."

Section 102 states the Congressional findings and purpose for the establishment of an Independent Defense Nuclear Safety Board ("Board"). The Board will review the content and application of health and safety standards and recommend improvements in the standards which govern Department of Energy (DOE) defense nuclear facilities. The Board will be a new and independent agency, with no operational responsibilities for DOE nuclear facilities and no statutory responsibility of any kind for the commercial nuclear industry. The Board will inform the Congress of its findings and recommendations.

Section 103 of the bill amends the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.) by adding a new Chapter 21 entitled "Defense Nuclear Safety Board".

Section 311 of proposed Chapter 21 creates the Board, composed of five members appointed by the President with the advice and consent of the Senate. The Board members are required to be experts in the field of nuclear safety. The President should also ensure that the Board as a whole is sufficiently knowledgeable about the national security missions of the Department of Energy. They will serve staggered six-year terms of office to ensure continuity. Board members will be expected to sever any significant financial relationships with DOE and its contractors at the time they assume office. Subsection (f) permits the Board to hire staff and consultants, but limits staff to one hundred full-time equivalents.

Section 312 of proposed Chapter 21 sets forth the Board's main functions.

Section 312 (a)(1) directs the Board to review the content and implementation of DOE's Safety Orders and standards and to recommend measures to ensure that public health and safety are adequately protected. "Adequate protection" is the level of safety required of commercially licensed nuclear reactors (Atomic Energy Act Section 182, 42 U.S.C. Section 2232.) It is appropriate to require the same general level of safety from DOE nuclear facilities as is required of commercial facilities. The Committee recognizes that specific quantitiative and qualitative standards for achieving adequate protection may not necessarily be the same as those applied to commercial facilities, to the extent DOE and commercial facilities are significantly different.

As applied to commercial facilities, the standard of adequate protection means "reasonable assurance that the health and safety of the public will not be endangered by the operation of the facility." (10 C.F.R. 50.35(c)). Absolute certainty or perfect safety is not required. What constitutes "reasonable assurance of adequate protection" is subject to change as the state of the nuclear safety art advances. The Board will be responsible for weighing such factors as technical feasibility, the risk of accidents, the record of past performance, the need for further improvement in nuclear safety, and other considerations. Such factors should be balanced by the Board when the adequate protection standard is applied.

The recent explication of the "adequate protection" concept by the U.S. Court of Appeals for the District of Columbia is important. In *Union of Concerned Scientists* v. *NRC*, 824 F.2d 108, 118 (D.C. Cir. 1987), the Court of Appeals held that under the adequate protection standard, the "NRC need ensure only an acceptable or adequate level of protection to public health and safety; the NRC need not demand that nuclear power plants present no risk of harm." The Court further stated that:

> The level of adequate protection need not, and almost certainly will not, be the level of "zero risk." This court long has held that the adequate-protection standard permits the acceptance of some level of risk.

The Board will recommend changes in DOE safety Orders and standards in order to specify health and safety requirements clearly and uniformly and to ensure the adequate protection of public health and safety. These recommendations will be advisory in nature. The National Research Council recently concluded that DOE has not "clearly articulated, documented, and implemented a safety objective for the operation of its production reactors." [8] DOE's current approach of "comparability"—the goal of making DOE reactors as safe as commercial nuclear reactors—needs to be strengthened by the development of quantitative standards and by limiting the discretion of DOE staff and contractors in the application of safety standards. Such standards should reflect a desire to ensure that DOE nuclear facilities are held to the same level of safety as are commercial facilities.

Recommendations made according to this section are subject only to the requirements of Section 313(a) and (b) discussed below with respect to public availability and formal response by the Secretary of Energy.

Section 312(a)(2) directs the Board to investigate actual or potential nuclear incidents at DOE nuclear facilities. "Nuclear incident" is a term defined by the Atomic Energy Act, 42 U.S.C. 2014(q), meaning:

> any occurrence, including an extraordinary nuclear occurrence, within the United States, causing, within or outside the United States, bodily injury, sickness, disease or death, or loss of or damage to property, or loss of use of property,

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[8] "Safety Issues at the Defense Production Reactors," National Academy of Sciences, National Academy Press, Washington, DC, 1987, p. 8.

> arising out of or resulting from the radioactive, toxic, explosive, or other hazardous properties of source, special nuclear, or byproduct material . . .

The legislative history of the term "nuclear incident" makes clear that it applies to a variety of incidents, including those that do not constitute an imminent or severe threat to public health and safety. The term is—

> designed to protect the public against any form of damage arising from the special dangerous properties of the materials used in the atomic energy program. It includes any damage which may result from any hazardous property of source, special nuclear, or byproduct material. It includes bodily injury or death, loss of or damage to property, and loss of use of property. While most incidents will be happenings which can be pinpointed in time—such as a failure of a runaway reactor component or an inadvertent exposure to radiation—it was not thought that an incident would necessarily have to occur within any relatively short period of time. For instance, the steady exposure to radiation, such as from an undetected leak of readioactive materials from a storage bin, could constitute an incident. S. Rep. No. 296, 85th Cong., 1st Sess. 16 (1957).

The focus of the Board's investigations should be on preventing nuclear incidents from occurring. Priority should be given to preventing nuclear incidents which could significantly adversely affect the public health and safety. The Board should distinguish between those instances which cannot be corrected by current safety procedures, and those where appropriate standards exist, but are not being adequately implemented.

Sections 312(a)(3)-(5) give the Board a broad range of information-gathering powers to assist it in evaluating nuclear incidents, and in carrying out its purposes under this Title. It can conduct studies and investigations to review the safety of DOE nuclear facilities, visit and consult with Department and contractor personnel as necessary, and review safety analysis reports. These provisions allow the Board to obtain the expert knowledge and advice of DOE, particularly the Environment, Safety and Health (ES&H) employees at DOE.

The Board may evaluate information from the scientific and industrial communities, as well as the public, with respect to actual or potential nuclear incidents, and regarding measures to improve health and safety standards and their implementation at DOE nuclear facilities. Public input is a vital source of information and a constructive vehicle for presenting community concerns regarding DOE facilities.

Section 312(a)(6) governs recommendations of the Board and actions thereon.

Section 312(a)(6)(A) provides that the Board will recommend specific measures to substantially reduce the likelihood that actual or potential nuclear incidents which would adversely affect the public health and safety will occur at a Department of Energy nuclear facility. The Board's recommendations are to ensure that health and

safety are adequately protected at DOE nuclear facilities. It is expected that many of the Board's recommendations to ensure adequate protection can be made pursuant to Section 312 Subsection (a)(1)(A). Should the Board determine that, to ensure adequate protection, specific measures are required to substantially reduce the likelihood that a nuclear incident will occur, it will make its recommendations pursuant to this subsection. The actual or potential nuclear incidents that would trigger this section are those that would have a significant adverse impact on public health and safety. Recommendations for the installation of systems for hydrogen gas mitigation in the event certain postulated accidents were to occur at a production reactor, or additional systems for the confinement of radioactive flows in the event of certain postulated accidents at process facilities handling liquid radioactive flows are examples of the type of recommendations past experience suggests.

In making its recommendations the Board is directed to consider technical and economic feasibility. Technical feasibility requires that the Board's recommendations be capable of implementation using generally accepted scientific and engineering principles. Economic feasiblity means that the Board may compare the cost of alternative approaches and structure its recommendations so as to reflect cost comparisons. The Board may compare the costs of alternative approaches to achieving adequate protection of public health and safety. The Board may consider such factors as the remaining useful life of facilities, schedules and plans for replacing them, and means to mitigate disruptions to ongoing operations that may result from recommended safety improvements, and other considerations.

Section 312(a)(6)(B) provides that if the Secretary of Energy determines that a recommendation of the Board will affect the ability to meet annual nuclear weapons stockpile requirements, then the Secretary will inform the President, Secretary of Defense and the Committee on Armed Services and Appropriations of the Senate and House of Representatives.

Section 312(a)(7) establishes reporting requirements that allow the Board to obtain the expert knowledge and advise of DOE, make the best use of existing health and safety expertise concerning DOE facilities, and reduce the need to expand the Board's staff.

Section 312(a)(8) gives the Board an opportunity to review the design of new nuclear facilities to ensure that the operation of each facility will adequately protect the public health and safety. In order that the Board's review be completed in timely fashion, the Secretaty shall ensure that the Board is briefed at regular intervals during the planning and design process. The Board may also review and monitor the execution of construction to ensure that the facility will adequately protect the public health and safety when completed.

Section 312(b) of proposed Chapter 21 provides the Board with the necessary powers to conduct hearings, including subpoena power to obtain witness testimony. Normally, the Board will not need to invoke statutory procedures to obtain information necessary to its evaluations.

Section 313 of proposed Chapter 21 establishes the procedures for making and implementing the recommendations of the Board.

Section 313(a) provides that all recommendations, except information that is classified or controlled according to subsection 313(g), shall be available to the public in the Department of Energy's regional public reading rooms and will be published in the Federal Register. Thirty days are allowed for public comment.

Section 313(b) requiresd the Secretary of Energy to transmit to the Board, within 45 days unless more time is sought, a description of the actions to be taken in response to the Board's recommendations. The Secretary's response will be published in the Federal Register. Thirty days are allowed for public comment.

Section 313(c) requires the Board to furnish the Secretary with copies of all comments, views, data, and arguments submitted under sections 313(a) and (b).

Section 313(d) allows the Board to reconsider and reinforce its recommendations made pursuant to Section 312(a)(6)(A) should the Secretary reject, in whole or in part, a recommendation of the Board. After the thirty days allowed for public comment, the Board may either reaffirm its original recommendation or make a revised recommendation. Based on the Board's review, the Secretary will make a final decision. The Secretary will publish the final decision and reasoning, and submit a report of that decision and reasoning to the Armed Services and Appropriations Committees of the Senate and House of Representatives. These provisions do not diminish the statutory responsibility of the Secretary of Energy for preventing the occurrence of nuclear incidents at DOE nuclear facilities.

Section 313(e) requires the Secretary to prepare a plan of implmentation for the Board's recommendations accepted by the Secretary within 90 days of the Secretary's final decision. The Secretary may implement the recommendation at any time.

Section 313(f) sets forth procedures in case a recommendation relates to an imminent or severe threat to the public health and safety. The Board would make such a determination only in the event that failure to implement a recommendation could have imminent, life-threatening consequences, such as an accident scenario, in which an escape of radiation sufficient to cause imminent, life-threatening injury might occur. In that case, the Board will transmit its recommendation to the President, Secretary of Defense and the Committees on Armed Services and Appropriations of the Senate and House of Representatives at the same time the Board transmits its recommendation to the Secretary. These recommendations are considered so important that the President and appropriate Congressional bodies must be notified immediately. The Secretary should respond as soon as possible, but not later than 45 days after receiving the recommendations. If the Secretary of Energy rejects the Board's recommendation relating to an imminent and severe threat to the public health and safety, then the President will review both the Board's recommendation and the Secretary's response and make a final determination as to whether the Board's recommendation should be implemented or some other course of action taken. An example of a recommendation under this subsection would be the decision to reduce significantly power levels at Savannah River reactors that took place following the confirmation that certain assumptions in the computer codes mod-

eling the performance of the emergency core cooling systems at those reactors contained significant uncertainties.

Section 313(g) requires the Secretary to implement each recommendation of the Board made pursuant to Section 312(a)(6)(A) with which the Secretary agrees within one year. If the Secretary agrees with the recommendations but determines that implementation is impracticable due to budgetary considerations, then the President will make a formal determination. Budgetary considerations that warrant a finding of impracticality by the Secretary include the likelihood that funds for implementation cannot be obtained within the one year allowed in subsection (f). Should the Secretary, after accepting the recommendation, be unable either to devote funds from the current budget or to provide for implementation in the next annual budget request, then the Secretary will seek a final determination by the President.

Considerations that warrant consultation with the Secretary of Defense and review and determination by the President include the inability to meet the annual nuclear weapons stockpile requirements. In such a case, the President should make the final decision whether to implement a recommendation that affects the ability to meet national security requirements.

Section 313(h) protects classified and controlled information.

Section 314(a) requires the Board to submit an annual report on its activities at the time the President submits his budget to Congress. This report is intended to provide Congress with an overview of the Board's activities, as well as an assessment of the improvements in the safety of DOE nuclear facilities and of outstanding safety problems.

Section 314(b) requires the Secretary of Energy to submit an annual report on the Department's activities under this Act to the appropriate Congressional committees.

Section 315 provides for judicial review in accordance with the provisions of the Administrative Procedures Act.

Section 316 allows the Board to receive assistance from the staff of the Nuclear Regulatory Commission and the Advisory Committee on Reactor Safeguards, and from the Director of the Naval Nuclear Propulsion Program.

Section 317 allows the Board to seek the assistance of the National Research Council or another appropriate group to evaluate differences between NRC regulations and DOE Orders governing nuclear facilities. The purpose of this evaluation is to determine the extent to which it is feasible for DOE nuclear facilities to comply with the safety standards articulated in NRC regulations.

Section 318 of proposed Chapter 21 defines the term "Department of Energy nuclear facility" to inclue DOE production and utilization facilities, with the exception of naval nuclear reactors governed by Executive Order 12344, and facilities or activities involved with the testing or transportation of nuclear explosives or nuclear material. DOE's test site is already subject to an extensive safety review process and safety issues are entirely distinct from those at DOE production facilities. Transportation of nuclear materials and explosives is governed by the Hazardous Materials Transportation Act and regulations promulgated by the Department of Transportation.

Section 104 of the bill amends Section 5314 of Title 5 to provide that members of the Nuclear Safety Board will be compensated at Level III of the Executive Schedule.

Section 105 of the bill directs the Secretary of Energy to transfer to the Nuclear Safety Board $7,000,000 from funds appropriated or otherwise made available to the Department of Energy for fiscal year 1988. It is the intention of the Committee to authorize such sums as may be required for the Board's operations in subsequent fiscal years.

VIII. Cost Estimate

U.S. Congress,
Congressional Budget Office,
Washington, DC, November 20, 1987.

Hon. Sam Nunn,
Chairman, Committee on Armed Services,
U.S. Senate, Washington, DC.

Dear Mr. Chairman: The Congressional Budget Office has prepared the attached cost estimate for Title I of S. 1085, the Nuclear Protection and Safety Act of 1987.

If you wish further details on this estimate, we will be pleased to provide them.

With best wishes,

Sincerely,

James Blum,
(For Edward M. Gramlich, Acting Director.)

CONGRESSIONAL BUDGET OFFICE—COST ESTIMATE

1. Bill number: Title I of S. 1085.
2. Bill title: Nuclear Protection and Safety Act of 1987.
3. Bill status: As ordered reported by the Senate Committee on Armed Services on November 19, 1987.
4. Bill purpose: Title I amends the Atomic Energy Act of 1954 to establish a five-member Defense Nuclear Safety Board to be appointed by the President. This board is to promote health and safety at Department of Energy (DOE) nuclear facilities by evaluating DOE health and safety standards, investigating actual or potential nuclear incidents, conducting special studies, and making recommendations to DOE that could reduce the likelihood of any adverse nuclear incidents at any DOE nuclear facility. The board is also to review the plans for any new DOE nuclear facilities from a health and safety aspect.
5. Estimated cost to the Federal Government:

[By fiscal year, in millions of dollars]

	1988	1989	1990	1991	1992
Estimated Authorization Level	7	12	13	12	14
Estimated Outlays	5	11	13	13	14

The costs of this bill fall within budget function 270.

Basis of Estimate: This bill authorizes $7 million to be transferred from the Department of Energy to conduct the activities of the Nuclear Safety Board in fiscal year 1988. We estimate that $7 million would be required annually during the six-year life of the board. The bill also directs DOE to provide information and assistance to the board. Based on information from DOE we estimate this support would cost approximately $5 million annually. This estimate assumes that the bill is enacted in January 1988, and that the board is appointed within 90 days.

This cost estimate does not reflect the additional costs that could be incurred if the board recommends health and safety improvement at DOE nuclear facilities that are implemented by DOE. CBO cannot predict what actions the board may recommended, nor DOE's response to any board recommendations.

6. Estimated cost to State and local governments: None.

7. Estimate comparison: None.

8. Previous CBO estimate: CBO prepared a cost estimate on June 29, 1987 for the Senate Committee on Governmental Affairs on S. 1085 as introduced on April 21, 1987. S. 1085 as ordered reported by the Senate Armed Services Committee amends Title I of the bill. The estimated cost of the Armed Services Committee's version of Title I is approximately the same as the cost of the earlier version.

9. Estimate prepared by: Kim Cawley.

10. Estimate approved by: C.G. Nuchols, (For James L. Blum, Assistant Director for Budget Analysis).

IX. Regulatory Impact of the Legislation

In accordance with paragraph 11(b) of rule XXVI of the Standing Rules of the Senate, the following statement of the regulatory impact of Title I of S.1085 as amended by the Armed Services Committee is made.

Title I creates a DOE Nuclear Safety Board which could recommend changes in the existing Orders which apply to the government-owned production and utilization facilities operated by DOE. Aside from this ability to recommend changes, Title I will entail no significant additional regulation of any individuals or businesses. No new regulations will be promulgated except those governing the Board's procedures, and no new information requirements will be made on the public. There will be no additional paperwork requirements resulting from enactment.

X. Changes in Existing Laws

In compliance with paragraph 12 of rule XXVI of the Standing Rules of the Senate, changes in existing law made by S. 1085, as reported are shown as follows (new matter is printed in italic, existing law in which no change is proposed is shown in roman):

ATOMIC ENERGY ACT OF 1954

Chapter 1. Declaration, Findings, and Purpose

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CHAPTER 2. DEFINITIONS

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CHAPTER 3. ORGANIZATION

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CHAPTER 4. RESEARCH

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CHAPTER 5. PRODUCTION OF SPECIAL NUCLEAR MATERIAL

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CHAPTER 6. SPECIAL NUCELAR MATERIAL

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CHAPTER 7. SOURCE MATERIAL

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CHAPTER 8. BYPRODUCT MATERIAL

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CHAPTER 9. MILITARY APPLICATION OF ATOMIC ENERGY

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CHAPTER 10. ATOMIC ENERGY LICENSES

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CHAPTER 11. INTERNATIONAL ACTIVITIES

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CHAPTER 12. CONTROL OF INFORMATION

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CHAPTER 13. PATENTS AND INVENTIONS

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CHAPTER 14. GENERAL AUTHORITY

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CHAPTER 15. COMPENSATION FOR PRIVATE PROPERTY ACQUIRED

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CHAPTER 16. JUDICIAL REVIEW AND ADMINISTRATIVE PROCEDURE

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CHAPTER 17. JOINT COMMITTEE ON ATOMIC ENERGY

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CHAPTER 18. ENFORCEMENT

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CHAPTER 19. MISCELLANEOUS

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CHAPTER 21—DEFENSE NUCLEAR SAFETY BOARD

Sec. 311. Establishment.
Sec. 312. Functions and powers of the Board; responsibilities of the Secretary of Energy.
Sec. 313. Board recommendations.
Sec. 314. Reports.
Sec. 315. Assistance from certain agencies of the Federal Government.
Sec. 316. Assistance by organizations outside the Federal Government.
Sec. 317. Judical review.
Sec. 318. Definition.
Sec. 319. Termination.

CHAPTER 1. DECLARATION, FINDINGS, AND PURPOSE

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CHAPTER 2. DEFINITIONS

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CHAPTER 3. ORGANIZATION

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CHAPTER 4. RESEARCH

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CHAPTER 9. MILITARY APPLICATION OF ATOMIC ENERGY

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CHAPTER 10. ATOMIC ENERGY LICENSES

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CHAPTER 15. COMPENSATION FOR PRIVATE PROPERTY ACQUIRED

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CHAPTER 17. JOINT COMMITTEE ON ATOMIC ENERGY

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CHAPTER 18. ENFORCEMENT

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CHAPTER 19. MISCELLANEOUS

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CHAPTER 21. NUCLEAR SAFETY BOARD

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CHAPTER 21. NUCLEAR SAFETY BOARD

SEC. 311. ESTABLISHMENT.—(a) There is established as an independent establishment in the executive branch a Defense Nuclear Safety Board (hereafter in this section referred to as the "Board").

(b)(1) The Board shall be composed of 5 members appointed by the President, by and with the advice and consent of the Senate, from among respected experts in the field of nuclear safety with a demonstrated competence and knowledge relevant to the independent investigative and oversight functions of the Board. No more than 3 members of the Board shall be of the same political party. Not later than 90 days after the date of the enactment of the Defense Nuclear Safety Board Oversight Act of 1987, the President shall submit such nominations for appointment to the Board.

(2) Any vacancy in the membership of the Board shall be filled in the same manner in which the original appointment was made.

(3) No member of the Board may have any significant finanical relationship with the Department of Energy or with any firm, company, corporation, or other entity engaged in activities under contract with the Department of Energy.

(c)(1) The Chairman and Vice Chairman of the Board shall be designated by the President. The Chairman and Vice Chairman and other Board members may not be reappointed to such offices.

(2) The Chairman shall be the chief executive officer of the Board and, subject to such policies as the Board may establish, shall exercise the functions of the Board with respect to—

(A) the appointment and supervision of employees of the Board;

(B) the organization of any administrative units established by the Board; and

(C) the use and expenditure of funds.

The Chairman may delegate any of the functions under this paragraph to any other member or to any appropriate officer of the Board.

(3) The Vice Chairman shall act as Chairman in the event of the absence or incapacity of the Chairman on in case of a vacancy in the office of Chairman.

(d)(1) Except as provided under paragraph (2), the members of the Board shall serve for terms of 6 years. Members of the Board may be reappointed.

(2) Of the members first appointed—

(A) one shall be appointed for a term of 2 years;

(B) two shall be appointed for a term of 4 years; and

(C) two shall be appointed for a term of 6 years,

as designated by the President at the time of appointment.

(3) Any member appointed to fill a vacancy occurring before the expiration of the term of office for which such member's predecessor was appointed shall be appointed only for the remainder of such term. A member may serve after the expiration of the member's term until a successor has taken office.

(4) Any member of the Board may be removed by the President for inefficiency, neglect of duty, or malfeasance in office.

(e) Three members of the Board shall constitute a quorum, but a lesser number may hold hearings.

(f) The Board may, for the purpose of performing its responsibilities under this chapter—

(1) employ such personnel as it considers necessary to perform administrative, clerical, technical, and other duties, but not more than the equivalent of 100 full-time employees;

(2) procure the temporary and intermittent services of experts and consultants to the extent authorized by section 3109(b) of title 5, United States Code, at rates the Board determines to be reasonable; and

(3) prescribe regulations to carry out the responsibilities of the Board under this chapter.

SEC. 312. FUNCTIONS AND POWERS OF THE BOARD; RESPONSIBILITIES OF THE SECRETARY OF ENERGY.—(a) The Board shall have the following functions and powers:

(1)(A) The Board shall review and evaluate the implementation of the health and safety standards of the Department of Energy, including all applicable Department of Energy Orders, at each Department of Energy nuclear facility. The Board shall recommend to the Secretary of Energy those specific measures that should be adopted to ensure that public health and safety are adequately protected at Department of Energy nulcear facilities. The Board shall recommend necessary changes in the

content and implementation of such Orders, and recommend matters on which research or additional research is needed.

(2)(A) The Board shall investigate actual or potential nuclear incidents, if any, at a Department of Energy nuclear facility.

(B) The purpose of any Board investigation under subparagraph (a) shall be—

(i) to determine whether the Secretary of Energy is adequately implementing the health and safety standards of the Department of Energy, including all applicable Department of Energy Orders, at Department of Energy nuclear facilities;

(ii) to ascertain information concerning the circumstances of any actual or potential nuclear incident, and its implications for public health and safety;

(iii) to determine whether such actual or potential nuclear incident is related to other actual or potential nuclear incidents at other Department of Energy nuclear facilities; and

(iv) to provide to the Secretary of Energy such recommendations for changes in Department of Energy orders and safety regulations and requirements, and such recommendations relating to research needs, as may be prudent or necessary.

(3) The Board shall have access to and may systematically analyze design and operational data, including safety analysis reports, from any Department of Energy nuclear facility.

(4) The Board may conduct special studies pertaining to safety at any Department of Energy nuclear facility.

(5) The Board may evaluate information received from the scientific and industrial communities, and from the interested public, with respect to—

(A) actual or potential nuclear incidents at any Department of Energy nuclear facility; or

(B) suggestions for specific measures to improve health and safety standards, the implementation of health and safety standards, or research relating to health and safety standards at Department of Energy nuclear facilities.

(6)(A) The Board shall recommend to the Secretary of Energy those specific measures that should be adopted to reduce substantially the likelihood that actual or potential nuclear incidents which would adversely affect public health or safety will occur at any Department of Energy nuclear facility. In making its recommendations pursuant to this section the Board shall consider the technical and economic feasibility of implementing the recommended measures.

(B) If the Secretary of Energy determines that any action recommended by the Board or any action proposed to be taken by the Secretary in response to the Board's recommendation might affect the ability of the Department of Energy to meet the annual nuclear weapons stockpile requirements established pursuant to section 91 of this Act, the Secretary shall inform the President, the Secretary of Defense, and the Committees on Armed Services and Appropriations of the Senate and House of

Representatives of such recommendation and his determination and shall consult with the Secretary of Defense on such action.

(7)(A) The Board may establish reporting requirements which shall be binding upon the Secretary of Energy.

(B) The information which the Board may require to be reported under this paragraph may include any materials designated as classified material pursuant to any other provision of this Act, or any materials designated as safeguards information and protected from disclosure under section 147 or 148 of this Act.

(C) The Board may, for the purpose of carrying out its responsibilities under this chapter use any facility, contractor, or employee of any other department or agency of the Federal Government with the consent of and under appropriate support arrangements with the head of such department or agency and, in the case of a contractor, with the consent of the contractor.

(D) The Secretary of Energy shall fully cooperate with the Board and provide the Board with ready access to such facilities, personnel, and information as the Board considers necessary to carry out its responsibilities under this chapter. Each contractor operating a Department of Energy nuclear facility under a contract awarded by the Secretary shall, to the extent provided in such contract or otherwise with the contractor's consent, fully cooperate with the Board and provide the Board with ready access to such facilities, personnel, and information of the contractor as the Board considers necessary to carry out its responsibilities under this chapter.

(E) The Secretary of Energy may deny access to information provided to the Board to any person who—

(i) has not been granted an appropriate security clearance or access authorization by the Secretary of Energy; or

(ii) does not need such access in connection with the duties of such person.

(8) Before beginning construction of a new Department of Energy nucler facility the Secretary of Energy shall give the Board the opportunity to review the design of such facility and to recommend to the Secretary, within a reasonable time, such modifications of the design as the Board considers necessary to ensure adequate protection of public health and safety. During the construction of any such facility, the Secretary shall give the Board the opportunity periodically to review and monitor the construction and to submit to the Secretary, within a reasonable time, such recommendations relating to the construction of that facility as the Board considers necessary to ensure adequate protection of public health and safety.

(b)(1) The Board or, on the authorization of the Board, any member thereof, may, for the purpose of carrying out this section, hold such hearings and sit and act at such times and places, and require, by subpoena or otherwise, the attendance and testimony of such witnesses and the production of such evidence as the Board or an authorized member may find advisable.

(2)(A) Subpoenas may be issued only under the signature of the Chairman or any member of the Board designated by him and shall be served by any person designated by the Chairman or any member.

The attendance of witnesses and the production of evidence may be required from any place in the United States at any designated place of hearing in the United States.

(B) Any member of the Board may administer oaths or affirmations to witnesses appearing before the Board.

(C) Any person who willfully neglects or refuses to qualify as a witness, or to testify, or to produce any evidence in obedience to any subpoena duly issued under the authority of this paragraph shall be fined not more than $500, or imprisoned for not more than 6 months, or both. Upon certification by the Chairman of the Board of the facts concerning any willful disobedience by any person to the United States Attorney for any judicial district in which the person resides or is found, the United States Attorney may proceed by information for the prosecution of the person for the offense.

SEC. 313. BOARD RECOMMENDATIONS.—(a) Subject to subsection (h), the Board shall make all recommendations submitted to the Secretary of Energy by the Board under this chapter available to the public in the Department of Energy's regional public reading rooms and shall publish in the Federal Register such recommendations and a requet for the submission of public comments on such recommendations to the Board. Interested persons shall have 30 days after the date of the publication of such notice in which to submit comments, data, views, or arguments to the Board concerning the recommendations.

(b)(1) The Secretary of Energy shall transmit to the Board, in writing, a statement as to whether he accepts or rejects, in whole or in part, the recommendations submitted to him by the Board under this section, a description of the actions to be taken in response to the recommendations, and his views on such recommendations. The Secretary of Energy shall transmit his response to the Board within 45 days after the date of the publication, under subsection (a), of the notice with respect to such recommendations or within such additional period, not to exceed 45 days, as the Board may grant.

(2) At the same time as the Secretary of Energy transmits his response to the Board under paragraph (1), the Secretary, subject to subsection (h), shall publish such response, together with a request for public comment on his response, in the Federal Register.

(3) Interested persons shall have 30 days after the dte of the publication of the Secretary of Energy's response in which to submit comments, data, views, or arguments to the Board concerning the recommendations.

(4) The Board may hold hearings for the purpose of obtaining public comments on its recommendations and the Secretary of Energy's response.

(c) The Board shall furnish the Secretary of Energy with copies of all comments, data, views, and arguments submitted to it under subsection (a) or (b).

(d) If the Secretary of Energy, in a response under subsection (b)(1), rejects any recommendation made by the Board under section 312(a)(6)(A), the Board shall either reaffirm its original recommendation or make a revised recommendation and shall notify the Secretary of its action. Within 30 days after receiving the notice of the Board's action under this subsection, the Secretary shall consider the Board's action and make a final decision whether to implement

all or part of the Board's recommendations. Subject to subsection (h), the Secretary shall publish the final decision and the reasoning for such decision in the Federal Register and shall transmit to the Committees on Armed Services and Appropriations of the Senate and the House of Representatives a report, in writing, containing that decision and reasoning.

(e) The Secretary of Energy shall prepare a plan for the implementation of each recommendation submitted by the Board under section 312(a)(6)(A) that is accepted by the Secretary. The Secretary shall transmit the implementation plan to the Board within 90 days after the date of the publication of the Secretary's final decision on such recommendation in the Federal Register. The Board may extend, by not more than 45 days, the time for the Secretary to transmit the plan. The Secretary may implement any such recommendation before, on, or after the date on which the Secretary transmits the implementation plan to the Board under this subsection.

(f) In any case in which the Board determines that a recommendation submitted to the Secretary of Energy under section 312(a)(6)(A) relates to an imminent or severe threat to public health and safety the Board, in addition to taking the actions required by subsection (a), shall transmit that recommendation to the President, the Secretary of Defense, and the Committees on Armed Services and Appropriations of the Senate and the House of Representatives at the same time that the Board transmits the recommendation to the Secretary of Energy. If the Secretary of Energy rejects the recommendation after considering the Board's action on the recommendation under subsection (d), then, notwithstanding that subsection, the Secretary shall submit the recommendation to the President. The President shall review the Secretary of Energy's response to the recommendation, the Board's action on such response, and the Secretary's determination under subsection (d) and shall make the final decision concerning acceptance or rejection of the recommendation.

(g)(1) Subject to paragraphs (2) and (3), not later than one year after the date on which the Secretary of Energy receives a recommendation from the Board under section 312(a)(6)(A), the Secretary shall implement that recommendation if accepted by the Secretary.

(2) If the Secretary of Energy determines that the implementation of a recommentation referred to in paragraph (1) is impracticable because of budgetary considerations, the Secretary shall submit to the President a report containing the recommendation and the Secretary's determination. The President shall determine whether to request Congress to appropriate funds for the implementation of the recommendation. If the President does not provide for the implementation of such recommendation in the next budget submitted to Congress under section 1105(a) of title 31, United States Code, after the date on which the President receives the report from the Secretary and, before the date of the submission of such budget to Congress, has not submitted a request to Congress for the appropriation of funds for the implementation of such recommendation for any fiscal year ending before the fiscal year for which such budget is submitted, the President shall submit to the Committees on Armed Services and Appropriations of the Senate and the House of Representatives a report containing the recommendation and a discussion of the budgetary consequences, safety consequences, national security

consequences, and other implications of implementing or not implementing the recommendation.

(3) If the Secretary of Energy determines that the implementation of a recommendation referred to in paragraph (1) would affect the Secretary's ability to meet the annual nuclear weapons stockpile requirements established pursuant to section 91 of this Act, the Secretary shall submit to the President a report containing the recommendation and the Secretary's determination. The President, in consultation with the Secretaries of Defense and of Energy, shall review the determination of the Secretary of Energy. If the President determines that, for reasons of national security, the recommendation should not be implemented, the President shall submit to the Committees on Armed Services and Appropriations of the Senate and the House of Representatives a report containing the recommendation and a discussion of the reasons for his determination.

(h) Notwithstanding any other provision of this section, the requirements to make information available to the public under this section shall be subject to the orders and regulations issued by the Secretary of Energy under sections 147 and 148 of this Act to prohibit dissemination of certain information.

SEC. 314. REPORTS.—(a)(1) The Board shall submit to the Committees on Armed Services and Appropriations of the Senate and the House of Representatives each year, at the same time that the President submits the budget to Congress pursuant to section 1105(a) of title 31, United States Code, a written report concerning its activities under this chapter, including all recommendations made by the Board, during the year preceding the year in which the report is submitted. The Board may also issue periodic unclassified reports on matters within the Board's responsibilities.

(2) The annual report under paragraph (1) shall include an assessment of—

(A) the improvements in the safety of the Department of Energy nuclear facilities during the period covered by the report;

(B) the improvements in the safety of the Department of Energy nuclear facilities resulting from actions taken by the Board or taken on the basis of the activities of the Board; and

(C) the outstanding safety problems, if any, within or in the operation of the Department of Energy's nuclear facilities.

(b) The Secretary of Energy shall submit to the Committees on Armed Services and Appropriations of the Senate and House of Representatives each year, at the same time that the President submits the budget to Congress pursuant to section 1105(a) of title 31, United States Code, a written report concerning the activities of the Department of Energy under this chapter during the year preceding the year in which the report is submitted.

SEC. 315. ASSISTANCE FROM CERTAIN AGENCIES OF THE FEDERAL GOVERNMENT.—(a) With the consent of and under appropriate support arrangements with the Nuclear Regulatory Commission, the Board may obtain the advice and recommendations of the staff of the Commission on matters relating to the Board's responsibilities and may obtain the advice and recommendations of the Advisory Committee on Reactor Safeguards on such matters.

(b) The Director of the Naval Nuclear Propulsion Program may provide to the Board assistance and advice on matters relating to the Board's responsibilities.

SEC. 316. ASSISTANCE FROM ORGANIZATIONS OUTSIDE THE FEDERAL GOVERNMENT.—The Board may enter into an agreement with the National Research Council of the National Academy of Sciences or any other appropriate group or organization of experts outside the Federal Government chosen by the Board to evaluate and interpret the differences between Nuclear Regulatory Commission regulations and Department of Energy Orders governing nuclear facilities, including the implications for public health and safety. The agreement should provide for the council, group, or organization to transmit to the Board any recommendation for issuance of a new safety standard by the Department of Energy or for amendment of a Department of Energy safety standard as such council, group, or organization considers appropriate.

SEC. 317. JUDICIAL REVIEW.—Chapter 7 of title 5, United States Code, shall apply to activities of the Board under this chapter.

SEC. 318. DEFINITION.—As used in this chapter, the term "Department of Energy nuclear facility" means—

(1) a production facility or utilization facility under the control or jurisdiction of the Secretary of Energy, but does not include any facility or activity covered by Executive Order numbered 12344, dated February 1, 1982, pertaining to the Naval nuclear propulsion program, or facilities or activities involved with the testing or transportation of nuclear explosives or nuclear material; and

(2) a nuclear waste storage facility under the control or jurisdiction of the Secretary of Energy, but does not include a facility developed pursuant to the Nuclear Waste Policy Act of 1982 (96 Stat. 2201; 42 U.S.C. 10101 et seq.) and licensed by the Nuclear Regulatory Commission.

SEC. 319. TERMINATION.—(a) The Board shall terminate upon the expiration of the 6-year period beginning on the date of the enactment of the Defense Nuclear Safety Board Oversight Act of 1987.

(b) This chapter shall not be effective after the date on which the Board terminates under subsection (a).

TITLE 5, UNITED STATES CODE

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PART III—EMPLOYEES

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Subpart D—Pay and Allowances

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Subchapter II—Executive Schedule Pay Rates

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§ 5314. Positions at level III.

Level IV of the Executive Schedule applies to the following positions, for which the annual rate of basic pay shall be the rate determined with respect to such level under chapter 11 of title 2, as adjusted by section 5318 of this title:

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MEMBERS, NUCLEAR REGULATORY COMMISSION

MEMBERS, DEPARTMENT OF ENERGY NUCLEAR SAFETY BOARD

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ADDITIONAL VIEWS OF MR. GLENN

I commend Chairman Exon and Senator Thurmond, the leaders of the Subcommittee on Strategic Forces and Nuclear Deterrence, along with S. 1085 cosponsors Senator Levin, Wirth, Cohen and Gore for their dedicated work on this legislation in the Armed Services Committee. Although the Armed Services Committee amendment differs from Title I of S. 1085 as reported by the Government Affairs Committee, we have worked well together to arrive at a package that I believe retains many of the best and most essential provisions of the legislation.

There have been honest differences of opinion on a fundamental issue—how safe or dangerous are operations in the current Department of Energy (DOE) complex. Candidly, I believe that the health, safety and environmental problems at these facilities are reaching critical proportions, and as a result, I also believe the DOE complex is putting Americans in increasing risk of being poisoned or irradiated. I am heartened that all of my colleagues agree that this legislation is needed to substantially increase the attention given to these issues, even if they are less convinced as to the degree of severity of the problems.

I am writing these additional views to point out just a few of the factors which lead me to believe that the DOE complex have become unacceptable hazards, and how this affects my view of the Armed Services amendment.

A series of reports over the past decade by the General Accounting Office (GAO) and advisory consultants to DOE have documented DOE's lack of attention in dealing with health and safety problems at its nuclear weapons plants. The most recent report, by the National Research Council examined DOE's nuclear production reactors at Sanannah River near Aiken, South Carolina, and at the Hanford nuclear reservation near Richmond, Washington. The report concluded that DOE lacks technical competence to enforce current safety orders and that estimates of escaping radiation in the event of severe nuclear accidents are highly optimistic.

The Savannah River reactors are operating at only fifty percent power capacity after the discovery that DOE had been operating the reactors at unsafe levels for nearly seven years, until late 1986.

The N-reactor at Hanford, which has some features similar to the Chernobyl reactor, is currently shut down because of safety problems highlighted by an earlier panel of experts convened by DOE. This reactor was known to have serious safety deficiencies at the time of its design and construction more than two decades ago.

The GAO has issued twenty-one reports, many of them at my request, detailing safety, health, and environmental abuses at most of the surveyed DOE nuclear facilities, including uranium and plutonium processing plants in Ohio, Tennessee, and Colorado, in addition to South Carolina and Washington. Serious contamination of groundwater and soil with radioactive and/or other highly toxic substances has occurred at these sites. For example, over a thirty-year period, nearly 300,000 pounds of uranium have been allowed to escape to the air at the Fernald, Ohio, site alone. Drinking water wells off site have been contaminated. During this period when workers and the public were at serious risk, DOE was, unfortunately, rewarding the particular contractor operating the facility for meeting production goals.

Subsequent to the Three Mile Island disaster, safety problems at commercial nuclear facilities in the U.S. and the alleged failures of the Nuclear Regulatory Commission to adequately regulate nuclear power plants have been a growing public concern in this country. But the fact of the matter is that the NRC would be forced to shut down every DOE reactor facility if the latter were subject to current commercial standards of safety.

Nor are safety and health considerations at DOE facilities limited to the reactors. DOE-sponsored research offers ample evidence of the results of hazards at the nuclear plants. A 1984 Epidemiological Project Summary of studies funded by DOE reveals that DOE nuclear workers at eight out of twelve locations studied were experiencing elevated levels of malignant cancers and certain non-malignant diseases. Elevated levels of leukemia, lung, brain, digestive tract, prostate, and Hodgkin's disease; and elevated levels of non-malignant respiratory disease were found among workers exposed to uranium dust and/or radiation from other internal and external sources.

How was all this allowed to happen? I believe the secrecy surrounding the nuclear weapons complex allowed significant mistakes to be made and compounded over time. These problems include design failures and the deterioration of these plants due to aging, sometimes sloppy operational procedures, and complacency in the face of internal reports documenting safety and environmental deficiencies. We are now experiencing the results of decades of inattention.

Now that the situation has reached critical proportions, DOE has launched an effort to address these problems, but this effect is in the classic mold of too little, too late. A relatively small environment, health, and safety (ESH) division has been formed, but its public pronouncements have too often fed the perception of skeptics that DOE's main concern is assuaging public opinion. Given what we now know of the condition of DOE's plants, the statistics on safety show only that we have been lucky, not wise. I sympathize with those in ESH and elsewhere in DOE who are seeking genuine change at DOE. They have the formidable task of overcom-

ing a mindset that has developed in the agency over 40 years that DOE's margins of safety are sufficiently adequate to permit corner cutting in the pursuit of production goals. Changing this attitude cannot be accomplished without outside help.

DOE has opposed S. 1085, but in the wake of the devastating report by the National Research Council, Secretary of Energy John Herrington announced that he would appoint a safety advisory board, similar in structure to that in S. 1085 except that this board would report only to the Secretary. Thus, the Secretary would be free to ignore any and all recommendations of the board, the same situtation that has prevailed since the beginning of the nuclear age. In light of DOE's history, this is unacceptable. The public deserves better and should demand better.

Driven by those concerns, I am particularly interested in ensuring that any Board resulting from this legislation have sufficient clout. The Board's most important recommendations should not be ignored or rejected out of hand by some future Secretary who lacks an appropriate sense of balance between the dual goals of production and safety.

In my view, the Presidential review provision governing those institutions where fundamental disagreements exist between the Board and the Secretary is drawn too narrowly in the Armed Services Committee amendement. The SASC amendment limits Presidential review to those situations where the Board finds a potential "nuclear incidents" presents an "imminent or severe threat to public safety and health", when the Secretary rejects the Board's recommendation. This suggests that there are nuclear incidents affecting public health and safety that are not severe. The problem is that a "nuclear incident" affecting public health and safety is defined as an occurrence causing death, injury, disease, or sickness and is therefore already severe in a real sense.

My view is that Presidential review should be required whenever the Secretary decides not to implement a Board recommendation that the Board believes "should be adopted to reduce substantially the likelihood that actual or potential nuclear incidents could occur which would adversely affect public health and safety." This means that any situation involving possible death, injury, disease or sickness in which the Secretary refuses to implement such an important Board recommendation would require Presidential review of the Secretary's decision.

Conclusion

Despite my concern expressed above, I am very pleased that the Armed Services Committee has recommended passage of Title I of S. 1085. I look forward to working toward the swift passage of this important legislation.

This legislation recognizes that DOE facilities should be subject to the same health and safety standards as commercial plants. The independent safety board should be a bridge toward the goal and should see its tasks in that light.

John Glenn.

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